Coastal Collaboration Cluster: meeting coastal challenges

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Outline

COST Workshop Smart Cities - 26 Sept 2011

- Australia’s Coast challenges
- Coastal Collaboration Cluster
Australian Coastal Cities

Sydney

Perth

Brisbane

Coastal Collaboration Cluster
85% of Australians live under 50km from the coast

Population ~ 21 million

coast ~ 6.5 million

New South Wales ~ 80% - < 3km
Growing NEEDS

Infrastructure and services
- Water supply
- Electricity supply
- Telecommunications
- Sanitation
- Food delivery
- Road and railway systems

Governance and planning
- Complexity - policy levels from federal to local, governments, decision-makers and citizens
Growing CHALLENGES

Enhanced by Climate Change

Erosion

Flooding
Growing CHALLENGES

Transport and services infrastructure

<table>
<thead>
<tr>
<th>Within 200m of the coastline</th>
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</thead>
<tbody>
<tr>
<td><strong>Regional infrastructure</strong></td>
</tr>
<tr>
<td>120 ports</td>
</tr>
<tr>
<td>5 power stations/substations</td>
</tr>
<tr>
<td>3 water treatment plants</td>
</tr>
<tr>
<td>170 unidentified industrial zones</td>
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<tr>
<td>1,800 bridges</td>
</tr>
<tr>
<td><strong>Community services and facilities</strong></td>
</tr>
<tr>
<td>258 police, fire and ambulance stations</td>
</tr>
<tr>
<td>75 hospitals and health services</td>
</tr>
<tr>
<td>46 government administration facilities</td>
</tr>
<tr>
<td>360 universities, colleges and schools</td>
</tr>
<tr>
<td>102 retirement/nursing homes</td>
</tr>
<tr>
<td>11 emergency services facilities</td>
</tr>
<tr>
<td>41 waste disposal facilities</td>
</tr>
</tbody>
</table>

(Source: Geoscience Australia 2009 in Developing a national coastal adaptation agenda 2010)
Growing CHALLENGES

Example: rail and tramways

Estimated length of existing rail and tramway infrastructure at risk from the combined impact of inundation and shoreline recession for sea level rise.

(Source: Climate Change Risk to Coastal Buildings and Infrastructure. Commonwealth of Australia, Department of Climate Change and Energy Efficiency) 2011.
Growing CHALLENGES

Example: rail and tramways

Estimated length of existing rail and tramway infrastructure at risk from the combined impact of inundation and shoreline recession for sea level rise.

Nationally: 1,200 - 1,500 km of rail lines and tramways potentially at risk from inundation and shoreline recession from a sea level rise of 1.1 metres.
MANAGEMENT Issues

- Adaptation coastal zone plans to sea level rise scenarios – zones (current, 2050, 2100)
  - 0.4m
  - 1.1m

- Management Options
  - Protection (seawalls, sandbags, rising house floors)
  - ‘Planned’ Retreat (hazard lines)
  - No action

ADAPTATION focus
MANAGEMENT Issues

- Adaptation coastal zone plans to sea level rise scenarios – zones (current, 2050, 2100)

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ADAPTATION focus

0.4m 1.1m
POLITICAL response

Examples Climate Change - Coast

2009 2010 2011

Coastal Collaboration Cluster
Update Coastal Management Plans

Political response / Sea-level rise scenarios

• Example of Wollongong City (NSW)
"The scientific advice is that even with a moderate degree of warming in the coming decades, there are serious risks to Australia’s water resources, coastal settlements and biodiversity.”
(Mr. Combet)

- review regulations and policies
- barriers to effectively adapting to the impacts of climate change
SCIENTIFIC research
Bridging the gap - Closing the gap?

... ongoing concern to improve the way on which this knowledge contributes to decision making.
A CSIRO Flagship Social Research Project

The Coastal Collaboration Cluster (2010-13) will develop approaches to better connect science with the needs of governments, communities and industries to meet coastal challenges.

- identify the key social and institutional barriers that inhibit the uptake of science in the coastal zone.
- ways to introduce and apply the best knowledge available to coastal policy-making and planning.
Key Issues

- population growth, food webs, climate policy, communication is core issue, resilient coastal Australia.

Overall Aims

- Methods to enhance the delivery of research outputs to ensure relevance to policy development at all levels (local, regional, state and national).
- Strategies to improve interaction between scientific and management agencies.
CURRENT Status

- Year 1 completed May 2011.
- Engagement with stakeholder groups – case studies around Australia.
- Develop reports, publications, book and briefings.
- Participate at conferences.
- BUT, this is only the begin!
Agent-Based Modelling (ABM)

Simulating the actions and interactions of autonomous agents

process $\Leftrightarrow$ rules = complex behaviour
Conclusion REMARKS

- ‘Better’ and smart **infrastructure** and other essential **services** are critical priorities for growing nations such as Australia.

- Adaptation and mitigation **pathways** are necessary to support a more **resilient** society to prepare for coastal changes (incl. climate change impacts).

- Connecting **science** with the needs of **governments, communities** and **industries** to meet coastal challenges is highly required.
Thank You!

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